REMARKS

Claims 1-17 are pending. By this Amendment, Fig. 5 is corrected. Claim 2 is amended and claims 5, 8, 9 and 12-14 have previously been withdrawn from consideration. Claims 18-29 are canceled. Reconsideration based on the above amendments and the following remarks is respectfully requested.

Entry of the amendments is proper under 37 CFR §1.116 since the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issue requiring further search and/or consideration since the amendments amplify issues previously discussed throughout prosecution; (c) satisfy a requirement of form asserted in the previous Office Action by amending the drawings and placing allowable claim 2 in independent form; and (d) place the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the final rejection. Entry of the amendments is thus respectfully requested.

Applicant gratefully acknowledges that the Office Action indicates that claim 4 is allowed and claims 2-3, 6, 7 and 17 contain allowable subject matter. Claim 2 is re-written in independent form. Accordingly, claims 2 and claims 3, 6, 7 and 17 dependent therefrom are in condition for allowance.

I. The Drawings Satisfy All Formal Requirements

The Office Action objects to the drawings under 37 C.F.R. §1.83(a). Specifically, the Office Action asserts that the limitation of the rear pressure chamber having a smaller one of the two pressure-receiving surface areas first claimed in line 4 from the bottom of claim 2 and also claimed in claim 4 is not shown in the drawings.

In addition, the Office Action objects to the drawings for failing to comply with 37 C.F.R. §1.84(p)(5). Specifically, the Office Action asserts that the drawings do not

include reference signs A_{m1} and A_{m3} mentioned in the description. Applicant respectfully disagrees.

Attached is a corrected Fig. 5 submitted to obviate the objections. Specifically, the feature of the pressure-receiving surface area (A_{m3}) of the rear pressure chamber 30 being smaller than the pressure-receiving surface area (A_{m1}) of the front pressurizing chamber 30 is fully supported and illustrated by original Fig. 5. The surface area A_{m3} is smaller than the surface area A_{m1} by an amount equal to a transverse cross-sectional surface area of the assisting piston 20. See Fig. 5. Elements 18, 20, 24, 26 and 30 are added for clarity and fully supported in the specification as filed. See , for example, pg. 54, line 2 to pg. 64, line 17. As such, no new matter has been added. Accordingly, withdrawal of the objections to the drawings is respectfully requested.

II. The Claims Define Allowable Subject Matter

The Office Action rejects claims 1, 10, 11, 15 and 16 under 35 U.S.C. §102(b) as unpatentable over U.S. Patent No. 4,838,619 to Ocvirk. This rejection is respectfully traversed.

As stated previously, Ocvirk shows a power-operated hydraulic pressure source (34-36), and a master cylinder (1) which is disposed between the hydraulic pressure source and a brake cylinder (17-20) and which includes a pressurizing piston (6, 7) which is advanced by an operation of a manually operable brake operating member (3). Contrary to the Examiner's view, however, this reference fails to teach a flow-rate changing device as recited in claim 1 of the present application.

The power-operated hydraulic pressure source (34-36) disclosed in Ocvirk at column 1, line 66 - column 2, line 3 is "an additional energy supply for the operation of the brake slip control device independent of the actuating system of the master brake cylinder." This power-operated hydraulic pressure source (34-36) is arranged to be operable during an anti-

lock braking-pressure control mode. In this anti-lock braking-pressure control mode of Ocvirk, the pressure of the fluid pressurized by the pump 34 is controlled by a pressure control valve (36) on the basis of the fluid pressure in a control chamber (23) provided in the master cylinder (1). That is, it is controlled on the basis of the operating foce (F) acting on the brake operating member (3), "so as to safeguard the same proportionality to the actuating force exerted on the brake pedal 3" (column 6, lines 6-14). Thus, the pressure of the pressurized fluid flowing into the master cylinder (1) is changed by the pressure control valve (36) according to the brake pedal actuating force.

However, the master cylinder (1) having the control chamber (23) connected to the control valve (36) is not constructed to be capable of changing the rate of flow of the pressurized fluid from the master cylinder into the brake cylinder, which rate corresponds to a given rate of flow of the pressurized fluid from the power-operated hydraulic pressure source (34-36) into the master cylinder. That is, the master cylinder is not capable of changing the rate of flow of the pressurized fluid from the master cylinder into the brake cylinder when the rate of flow of the pressurized fluid from the power-operated hydraulic pressure source into the master cylinder is held constant at a given value. Thus, the master cylinder in Ocvirk does not constitute a part of a flow-rate changing device as recited in amended claim 1.

Moreover, in the braking system of Ocvirk, the power-operated hydraulic pressure source (34-36) is not in operation and is not operable during a normal braking operation. That is, during the normal braking operation, the motor 35 is not operated while a magnetic valve (39) provided for communication between the control chamber (23) and the reservoir (21) is held open to permit the fluid to be discharged from the control chamber (23) into the reservoir (21) as a control piston (24) is advanced by the brake operating member (3). See column 5, lines 43-47 and the last three lines in the ABSTRACT. In this normal braking

operation of Ocvirk, the fluid pressure in the brake cylinders (17-20) is controlled according to the brake pedal actuating force F. See column 5, lines 30-43 of Ocvirk.

The motor 35 of Ocvirk is started upon detection of a blocking tendency of a vehicle wheel by a brake slip control device (not shown), during a normal braking operation, (see column 5, lines 51-54) and the pressurized fluid delivered from the hydraulic pressure source (34-36) is supplied to the brake cylinder (17-20) through a supply tank (12), supply chambers (10, 11), central valves (8, 9) of master cylinder pistons (6, 7) and working chambers (4, 5) (see column 5, lines 57-68). In the brake slip control (i.e., anti-lock braking-pressure control mode) of Ocvirk, however, the rate of flow of the pressurized fluid from the chambers (4, 5) into the brake cylinders (17, 20) is determined by the rate of flow of the pressurized fluid from the power-operated hydraulic pressure source (34-36) into the master cylinder (1), i.e., into the working chambers (4, 5) through the supply chambers (10, 11). Thus, the braking system of Ocvirk does not have a flow-rate changing device as recited in the last paragraph of Applicant's pending claim 1, since the rate of flow of the pressurized fluid from the master cylinder (1) into the brake cylinders (17-20) cannot be changed when the rate of flow of the pressurized fluid from the pump (34) into the master cylinder (1) is held at a given value.

The Examiner refers to the magnetic valve (39) of Ocvirk, and appears to allege that the function of this valve (39) is similar to Applicant's shut-off valve (90) in the illustrated embodiment of Figs. 1-10, in that the valve (39) of Ocvirk is closed to prevent the pressurized fluid from escaping the rear pressure chamber (23). However, the magnetic valve (39) of Ocvirk does not contribute in any manner to a change in the rate of flow of the pressurized fluid from the master cylinder (1) into the brake cylinders (17-20).

Rather, as explained above, Ocvirk's magnetic valve (39) is provided to permit an advancing movement of the control piston (24) during a normal braking operation, namely,

to permit the fluid to be discharged from the control chamber (23) into the reservoir (21) through the open magnetic valve (39) as the control piston (24) is advanced. Ocvirk's magnetic valve (39) is closed when the motor (35) is started to initiate an anti-lock braking-pressure control operation (brake slip control mode), to place the control valve (36) to be operable according to the fluid pressure in the control chamber (23). During the brake slip control, the magnetic valve (39) is placed in the closed state, and a valve passage (32) provided for communication between the supply chamber (11) and the pressure control chamber (23) is closed due to the pressure difference between the control chamber (23) and the supply chamber (11), as shown in Fig. 2 of Ocvirk and as described at column 6, lines 18-21, so that "the tandem master brake cylinder 1 is held in a ready-for-operation condition safeguarding a safe actuation of the brake upon failure of the brake slip control device" (column 6, lines 25-29) during the brake slip control (see also column 1, lines 26-31).

It is noted that the fluid pressure in the control chamber (23) of Ocvirk when the magnetic valve (39) is closed is not a pressure of the fluid delivered from the power-operated hydraulic pressure source (34-36), since the valve passage (32) is closed. Instead, the fluid pressure in the control chamber (23) is a fluid pressure generated as result of an advancing movement of the control piston (24) by an operation of the brake pedal.

Ocvirk simply teaches the provision of the power-operated hydraulic pressure source (34-36) operable in a brake slip control mode such that the pressure of the fluid delivered from the pump (34) is controlled by the control valve (36) on the basis of the fluid pressure in the control chamber (23) of Ocvirk, which corresponds to the brake pedal actuating force F and which is prevented from escaping from the control chamber (23) by the magnetic valve (39) placed in the closed state during the brake slip control. In a normal braking operation, the magnetic valve (39) of Ocvirk is held open to permit an advancing movement of the control piston (24) with an increase in the brake pedal actuating force F, so that the

pressure in the brake cylinders (17-20) is controlled according to the brake pedal actuating force F, as well known in the art. The magnetic valve of Ocvirk does not constitute a part of a flow-rate changing device as recited in Applicant's pending claim 1, and does not correspond to a discharge-flow control device (90) recited in claim 1, contrary to the Examiner's allegation.

Pending independent claim 1, which is patentable for the reasons stated above, covers not only the structural arrangement of the flow-rate changing device in the embodiments of Figs. 1-11, but also other structural arrangements of the flow-rate changing device in the other embodiments, including the fifth embodiment of Figs. 14-16, the sixth embodiment of Figs. 17-19, the seventh embodiment of Figs. 20-22, and the eighth embodiment of Fig. 23. That is, the claimed flow-rate changing device encompasses various structural arrangements, which will be further discussed. Claim 1 recites that the flow-rate changing device includes the master cylinder (10; 202; 292; 392) and is operable to change the rate of flow of the pressurized fluid from the master cylinder into the brake cylinder, which rate corresponds to a given rate of flow of the pressurized fluid from the power-operated hydraulic pressure source into the master cylinder.

In the first embodiment of Figs. 1-10, the rate of flow of the pressurized fluid from the master cylinder into the brake cylinder is relatively high when the pressurized fluid is delivered from the power-operated hydraulic pressure source (12) to a rear pressure chamber (30) partially defined by a comparatively small pressure-receiving surface area of a pressurizing piston (18) of the master cylinder (10), and is relatively low when the pressurized fluid is delivered from the hydraulic pressure source to a front pressurizing chamber (26) partially defined by a comparatively large pressure-receiving surface of the pressurizing piston (18).

In the fifth embodiment of Figs. 14-16, the rate of flow of the pressurized fluid from the master cylinder into the brake cylinder is relatively high when the pressurized fluid is delivered from the power-operated hydraulic pressure source (12) to a rear pressure chamber (226) partially defined by a comparatively small pressure-receiving surface area of a first pressurizing piston (214) of the master cylinder (202), and is relatively low when the pressurized fluid is delivered from the hydraulic pressure source to an intermediate fluid chamber (224) partially defined by a comparatively large pressure-receiving surface are of a second pressurizing piston (210) of the master cylinder (202). Claim 5 is directed to the fifth embodiment.

In the sixth embodiment of Figs. 17-19, the rate of flow of the pressurized fluid from the master cylinder into the brake cylinder is relatively high when the pressurized fluid is delivered from the power-operated hydraulic pressure source (12) to a rear pressure chamber (304) partially defined by a pressurizing piston (300) of the master cylinder (292), and is relatively low when the pressurized fluid is delivered from the hydraulic pressure source to the rear pressure chamber (304) and a pressure control chamber (318) of an assisting cylinder (294). Claim 9 is directed to the sixth embodiment.

In the seventh embodiment of Figs. 20-22, the rate of flow of the pressurized fluid from the master cylinder into the brake cylinder is relatively high when the pressurized fluid is delivered from the power-operated hydraulic pressure source (12) to a rear pressure chamber (414) partially defined by a pressurizing piston (402) of the master cylinder (390), and is relatively low when the pressurized fluid is delivered from the hydraulic pressure source to the rear pressure chamber (414) and a pressure control chamber (318) of an assisting cylinder (294). Claims 8 and 9 are directed to the seventh embodiments.

In the eighth embodiment of Fig. 23, the rate of flow of the pressurized fluid from the master cylinder into the brake cylinder is relatively high when the pressurized fluid is

delivered from the power-operated hydraulic pressure source (12) to a rear pressure chamber (414) partially defined by a pressurizing piston of the master cylinder (392), and is relatively low when the pressurized fluid is delivered from the hydraulic pressure source to the rear pressure chamber (414) and a pressure control chamber (318) of an assisting cylinder (294). Claims 8 and 9 are directed to the eighth embodiments.

It will be understood that the structural arrangements of the flow-rate changing device in the various embodiments described above are neither anticipated by nor rendered obvious by the disclosure in Ocvirk, and are covered by the language of pending claim 1.

Accordingly, Applicant respectfully asserts that the rejection under 35 U.S.C. §102 should be withdrawn because Ocvirk does not disclose each and every feature of independent claim 1.

As pointed on in MPEP §2131, "[t]o anticipate a claim, the reference must teach every element of the claim." Thus, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987)."

For at least these reasons, it is respectfully submitted that independent claim 1 is patentable over Ocvirk. The remaining claims that depend from independent claim 1 are likewise patentable over Ocvirk for at least the reasons discussed above, as well as for the additional features they recite.

III. Rejoinder of Claim 5, 8, 9 and 12-14 is Requested

Withdrawn claims 18-29 are canceled without prejudice or disclaimer. However, since these claims depend from and are allowable for at least their dependence on allowable base claim 1, Applicant respectfully requests the Examiner to rejoin claims 5, 8, 9 and 12-14.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-17 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,

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Attachments: Drawing Sheet

Date: September 11, 2003

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